



BOISE STATE UNIVERSITY

OFFICE OF THE PRESIDENT

MESSAGE FROM PRESIDENT BOB KUSTRA

It is with real pleasure that I write to introduce this thirteenth volume of the McNair Scholars Research Journal. The papers contained in this volume represent a remarkable breadth of scholarship that encompasses some of the best of what Boise State University has to offer. The Scholars, their faculty mentors, the staff of the McNair Program, and all of us at Boise State are very proud of this work.

Congratulations to all of the 2017 McNair Scholars for your achievements over the past year. In particular, I want to acknowledge the hard work and accomplishments of the senior Scholars whose research is represented in the papers in this publication. McNair scholars work with faculty mentors who are committed to the rigors of scholarship—a working relationship that both students and faculty describe as unique and beneficial. I also want to recognize and thank all of the faculty mentors who have worked with our McNair Scholars. It is your patience, guidance, and encouragement that promotes the transformation of these students into scholars.

The Ronald E. McNair Post-Baccalaureate Achievement Program honors the memory and achievement of the late Dr. Ronald E. McNair, a physicist and NASA astronaut. Its goal is to encourage undergraduates from underrepresented backgrounds to emulate the academic and professional accomplishments of Dr. McNair by facilitating their pursuit of doctoral degrees and academic careers in teaching and research. The McNair Scholars Research Journal is evidence that the McNair Program provides a valuable opportunity for these students to explore research on significant issues. The McNair Program also provides students access to nationwide conferences and graduate schools where they can present their original projects and meet doctoral faculty. Completing its fourteenth year on our campus, the program's formula for helping students gain access to graduate school programs has proven very successful for a vast majority of those who have participated since its inception.

The research presented here signals the arrival of a new group of rising scholars who will carry their talents, enthusiasm, and hard work ahead into graduate programs here and across the country. I hope that you will continue to aspire, achieve, and pursue your dreams.

Again, congratulations and best wishes.

Sincerely,

Bob Kustra

MESSAGE FROM THE DIRECTOR

We are very happy to be publishing our thirteenth volume of the Boise State *McNair Scholars Research Journal*. The papers presented here are the outcome of the McNair Scholars' research projects conducted during their participation in the program and demonstrate the variety of excellent undergraduate research that can be produced when students are provided meaningful support through collaborative efforts. This would not be possible without the dedicated support of faculty mentors who supervise and guide our scholars through their research endeavors.

This journal is the culmination of the research component of the McNair Scholars Program. By engaging in undergraduate research these scholars have developed important analytical and methodological skills, academic sophistication, and confidence that will aid in their success in graduate school. This journal provides them an opportunity to have their research published and to gain an early understanding of the importance of disseminating their work for others to utilize. It also helps substantiate the role publishing may play in their future careers.

Maintaining a high standard of excellence throughout this process, these McNair Scholars have become capable researchers and have clearly demonstrated their readiness to engage in the demands of research at the graduate school level. To each of them we would like to send a sincere thank you for choosing to engage with the McNair Scholars Program. Please remember that you share a tremendous bond with all the McNair Scholars who have come before you in this process and we look forward to seeing your future engagement with those who will follow in your footsteps. It is appropriate that your efforts culminate in the recognition of your work through this journal.

Finally, we would like to extend our deepest gratitude to the many faculty mentors who have guided and supported McNair Scholars throughout the life of our program. You have been instrumental in providing a solid research foundation that has given each one the ability to enter graduate school with confidence.

Congratulations McNair Scholars!



Gregory Martinez
Director



Sarah Ritter
Program Coordinator